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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,443	10/15/2001	Jessica Fridrich	438P921	3236

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HANCOCK & ESTABROOK, LLP
1500 MONY Tower I
PO Box 4976
Syracuse, NY 13221-4976

EXAMINER	
MACKOWEY, ANTHONY M	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/977,443	FRIDRICH ET AL.	
	Examiner	Art Unit	
	Anthony Mackowey	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *9-12,21-24 and 26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,13-20,25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/14/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I: claims 1-8,13-20 and 25, dealing with a method for losslessly embedding a message into a digital object wherein one subset is extracted from said object.

Species II: claims 9-12, 21-24 and 26, dealing with a method for losslessly embedding a message into a digital object wherein two subsets are defined from said object.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Chris Pastel on 12/1/2004 a provisional election was made without traverse to prosecute the invention of Lossless Embedding of Data in Digital Objects, claims 1-8, 13-20, and 25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-12, 21-24, and 26 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

Claims 1-5, 7-8 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,047,374 to Barton in view of U.S. Patent 6,633,652 to Donescu.

As to claim 1, Barton discloses a method for losslessly embedding a message into a digital object (col. 4, lines 54-59), said method comprising steps of:

extracting from said object a first subset that is losslessly compressible (col. 4, lines 59-60);

said first subset having the property that it can be randomized while preserving the perceptual quality of said object (col. 5, lines 15-19);

compressing said first subset into a compressed bitstream (col. 7, line 8);

concatenating said compressed bitstream with said message to form a second subset (col. 7, lines 4-9);

inserting said second subset into said object in place of said first subset to form a transformed object, whereby said message is effectively transmitted and extracted by transmitting said transformed object by decompressing said compressed bitstream, restoring said first subset, and reinserting said first subset into said object (col. 8, lines 23-26).

Barton does not disclose the digital object being comprised of samples. However Donescu does disclose a digital image consisting of a series of digital samples (col. 8, lines 21-22).

Barton and Donescu are combinable because they are both concerned with embedding authentication information into digital objects. It would have been obvious to of ordinary skill in the art at the time the invention was made to have the digital object of Barton comprised of samples (such as a series of pixels, each with a coefficient representing one of the 256 grey levels) as taught by Donescu because these pixel values would be modified to losslessly embed the hidden message in the digital object.

As to claim 13, Barton discloses an apparatus for losslessly embedding a message into a digital object (col. 9, lines 41-46). With regard to the remainder of this claim arguments applied above to claim 1 are applicable.

As to claims 2 and 14, Barton further discloses said digital object is an uncompressed image (col. 5, lines 15-34).

As to claims 3 and 15, Barton further discloses said digital object is an image in a lossy image format (col. 5, lines 1-19).

As to claims 4 and 16, Barton further discloses said digital object is an audio file or a video file (col. 5, line 67 - col. 6, line 1).

As to claims 5 and 17, Barton does not disclose said first subset comprises all bits from a fixed bitplane. However, Donescu does teach a subset comprising bits from a fixed bitplane (col. 8, lines 66-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first subset as taught by Barton be comprised of all bits from a fixed bitplane as taught by Donescu because limiting the number of bitplanes (preferably of low significance) in which bits are modified would guarantee imperceptibility of the message inserted into the image and preserve visual quality (Donescu, col. 8, line 66 – col. 9, line 3).

As to claims 7 and 19, Barton further discloses said message is a digital watermark. (col. 6, lines 5-8).

As to claims 8 and 20, Barton further discloses said message is an authentication code. (col. 6, lines 3-14).

As to claim 25, Barton does disclose the invention being implemented using a software program operating a general purpose computer but does not disclose a computer-readable storage medium embodying program instructions for a method for losslessly embedding a message into a digital object. However, Donescu does disclose such a storage mediums (ROM, hard disk, and diskettes) (col. 10, lines 12-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to embody the software program as taught in a computer-readable storage medium as taught by Donescu because components such as ROM and hard disks are inherent in modern computers and such computer-readable storage mediums have the inherent advantages of adaptability (easily updated with newest program), storage capacity, safe, stable storage, and are generally cost effective.

Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Barton and Donescu as applied to claims 1 and 13 above, and further in view of U.S. Patent 6,763,121 to Shaked et al. (Shaked).

Barton discloses applying special discrimination (prediction) functions to small groups of pixels in said digital object (col. 7, lines 33-40 and col. 10, lines 6-16) but does not disclose said first subset is generated by adding invertible noise (flipping). However, Shaked does teach flipping to embed information into an image (col. 7, lines 48-63).

Barton, Donescu and Shaked are combinable because they are all concerned with data hiding and watermarking digital objects such as digital images. It would have been obvious to one of ordinary skill at the time the invention was made to have the first subset as taught by the

combination of Barton and Donescu to be generated by flipping as taught by Shaked because certain pixel values need to be "changed" in order to reflect watermark values and embed information into the image (col. 7-lines 48-56) Such flipping combined with the special discrimination functions disclosed by Barton would create the necessary properties of the first subset required to losslessly embed data into a digital object while maintaining perceptual quality.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,674,873 to Donescu et al. is cited for disclosing a method of extracting subsets and inserting watermarks in digital images.

U.S. Patent Application Publication 2002/0146123 to Tian is cited for disclosing a method of using the embedded watermarks to repair altered parts of the digital object.

The article entitled "Media Compression via Data Hiding" by Zhu, B. et al. is cited for disclosing a method in which a residual part of a digital object is compressed and embedded into a host part of the digital object.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Mackowey whose telephone number is (703) 306-4086. The examiner can normally be reached on M-F 9:00 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AM
12/06/2004

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600